



**FIRST ANNUAL REPORT OF PROGRESS ON CHILDREN'S HEALTH ISSUES
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
TOXICS STEERING GROUP**

September 25, 2001

I. INTRODUCTION

Michigan Department of Environmental Quality (MDEQ) Director Russell J. Harding issued a memo dated March 17, 2000, to Deputy Director Arthur R. Nash Jr., expressing support for the recommendations contained in the February 2000 Michigan Environmental Science Board report entitled, "Analysis of the Michigan Department of Environmental Quality's Administered Environmental Standards to Protect Children's Health." In the memo, Director Harding indicated that the MDEQ's Toxics Steering Group (TSG) is to make an annual report of their findings and recommendations of action to be taken by the MDEQ to ensure adequate protection of children's health. This document provides the first annual report of the TSG's actions to implement both the directives contained in the March 17, 2000 memo from Director Harding to Deputy Director Nash, and the recommendations of the Michigan Environmental Science Board Children's Standards Investigation Panel. This report builds upon the December 20, 2000 "Interim Report of Progress on Children's Health Issues," prepared by the TSG, and hereafter referred to as the Interim Report. Following issuance of the Interim Report, Deputy Director Nash prioritized the recommendations from that report for further work by the TSG. This first annual report will provide a status report on implementation of the recommendations found within the Interim Report, and provide additional recommendations for future work.

This report is also intended to fulfill the requirements of Section 220 of 2000 PA 275, an act to make appropriations for the Department of Environmental Quality for the fiscal year ending September 30, 2001.

II. SUMMARY OF MICHIGAN ENVIRONMENTAL SCIENCE BOARD CHILDREN'S STANDARDS INVESTIGATION PANEL RECOMMENDATIONS AND CORRESPONDING TSG ACTIONS AND RECOMMENDATIONS FOR IMPLEMENTATION

The Michigan Environmental Science Board Panel's recommendations are summarized under the four main headings below. Specific MDEQ actions taken in response to these recommendations, as well as recommendations from the Interim Report and a status report on these recommendations, are provided below each panel recommendation.

- A. *The Michigan Environmental Science Board Panel recommended that "the MDEQ Toxic Steering Group's interactions with toxicological, epidemiological, and risk assessment staff in other state departments" be increased.*

On September 22, 2000, Director Harding approved the MDEQ Policy and Procedures 09-006 under which the TSG will operate. The TSG procedures indicate that the membership of the group will include all MDEQ Toxicologists and allow other state of Michigan departments to identify toxicologists, epidemiologists, or other appropriate technical staff to serve as TSG members. Currently Dr. Brian Hughes, Pesticide and Plant

Pest Management Division, represents the Michigan Department of Agriculture on the TSG. In addition, Dr. Nancy Frank, Animal Industry Division, also served as a representative of the Michigan Department of Agriculture from September 2000 to May 2001. The Michigan Department of Community Health representatives are Dr. Linda Larsen, Environmental and Occupational Epidemiology Division, and Dr. Jackie Scott, Director, Chemistry and Toxicology Division. Dr. David Wade, Director, Environmental and Occupational Epidemiology Division also served as a representative of the Michigan Department of Community Health from September 2000 to January 2001. The Michigan Department of Agriculture and the Michigan Department of Community Health members will attend meetings and participate in discussions specifically related to children's health issues. They will also participate in other meetings and discussions of interest to them and their department's programs or where they possess expertise in the issue under discussion.

The first meeting of the expanded TSG was held on September 25, 2000. To facilitate the review of specific issues, four subcommittees within the TSG were formed:

Children's Environmental Health – (Subcommittee Chair: Mary Lee Hultin, Air Quality Division)

This subcommittee is charged with tracking developments in the area of children's environmental health and making recommendations to the TSG for incorporation into human health risk assessment procedures, as appropriate. The objectives of this subcommittee and associated actions include the following:

1. Track the latest scientific findings in the area of children's environmental health
 - a) The subcommittee has been actively tracking the latest scientific findings in this area. The MDEQ librarian monitors new literature for publications in this area. All members of this subcommittee also monitor the literature via periodical reviews and the Internet. A database has been developed listing reports and studies reviewed and critiqued by the group. The current contents of this database is included as Appendix A.
 - b) Preliminary efforts have been made to identify activities in other states in the area of children's environmental health. The subcommittee is waiting for the release of the Association of State and Territorial Health Officials and Environmental Council of the States state survey on this issue before delving deeper into this area. Activities in California, a particularly active state, are currently being reviewed.
 - c) Efforts to keep updated on developments in United States Environmental Protection Agency (EPA) have been thwarted by the failure of that agency to respond to inquiries. Neither the Presidential Task Force on Environmental Health and Safety Risk to Children nor the federal Children's Health Protection Advisory Committee has been forthcoming with their mandated reports. However, the subcommittee continues to pursue new contacts.
 - d) The EPA Strategy for Research on Environmental Risks to Children has been reviewed for areas of potential interest to the varying divisions/departments. Members are charged with tracking results of the individual research findings pertinent to their divisions/departments areas of responsibility.

- e) Three members of the group participated in the Southeast Michigan Initiative Children's Environmental Health Workshop held on May 11, 2001.
2. Coordinate with other subcommittees of the TSG to ensure that aspects of these issues pertaining to children's environmental health are comprehensively addressed
 - a) Two of the other subcommittees (i.e., Uncertainty Factors in Noncancer Risk Assessment and Dioxin Review) of the TSG have representatives from the Children's Environmental Health Subcommittee. This subcommittee will monitor the activities of the Mixtures and Cumulative Risk Subcommittee and coordination will be pursued as appropriate.
 - b) The Michigan Department of Agriculture and the Michigan Department of Community Health have designated representatives on the Children's Environmental Health Subcommittee. Their presence provides useful interaction and opportunities for coordination with their respective departments regarding the issue of children's environmental health.
3. Provide recommendations to the TSG regarding necessary actions to ensure that MDEQ's human health risk assessments are adequately protective of children's environmental health

No recommendations have been made as yet. The group is looking at the use of child-specific exposure factors in various division/department risk assessment procedures and will be reviewing the EPA draft Child-Specific Exposure Factors Handbook in conjunction with that review. Any pertinent recommendations arising from that review will be provided to the TSG.

Mixtures and Cumulative Risk - (Subcommittee Chair: Robert Sills, Air Quality Division)

This subcommittee is charged with evaluating the available approaches for performing toxicological risk assessment for exposures to mixtures of substances as well as cumulative exposure and risks. This subcommittee will consider how and if these approaches may be appropriately applied in the MDEQ regulatory programs. This is an extremely broad and challenging subject to address, with potentially wide ramifications to all of the MDEQ's regulatory risk assessment programs. This subcommittee has begun the initial task of collecting and reviewing the relevant scientific and policy reports related to these issues. Other responsibilities and priorities of staff have hindered further progress on this initiative.

Uncertainty Factors in Noncancer Risk Assessment – (Subcommittee Chair: Jeffrey Crum, Environmental Response Division)

The charge of this subcommittee is to determine if the application of an additional uncertainty factor to account for incomplete toxicity data is justified in deriving noncarcinogenic toxicity values, specifically, oral reference doses and inhalation reference concentrations. The EPA guidance on the development of oral reference dose and recent noncarcinogenic toxicity assessments published in the EPA Integrated Risk Information System database indicate that the "incomplete database uncertainty factor" should be considered and has been applied for some chemicals. Historically, the incomplete database uncertainty factor has not been applied in noncarcinogenic toxicity assessments conducted by MDEQ Toxicologists unless an EPA Integrated Risk Information System value is used that may have already incorporated this value.

A wealth of information related to the broad subject of uncertainty factors and the basis for their use has been published in scientific journals and is currently being reviewed by the subcommittee members. The subcommittee has nearly completed its review of approximately 70 scientific publications on the subject and is in the process of categorizing and identifying key papers to use in preparing a report of their recommendations to the TSG.

Dioxin Review – (Subcommittee Chair: Dr. Deborah Mackenzie-Taylor, Waste Management Division)

This subcommittee is charged with reviewing the MDEQ standards and criteria for dioxin and dioxin-like compounds. As part of this review, this subcommittee has been following the EPA's efforts in the reassessment of the toxicity and health risks associated with these compounds. The subcommittee has reviewed the draft chapters of the EPA "Dioxin Reassessment," the report of the EPA peer review panel, and EPA's Science Advisory Board review of the "Dioxin Reassessment." Currently, the subcommittee is waiting for EPA's final version of the "Dioxin Reassessment" prior to making recommendations on any standards or criteria for dioxin and dioxin-like compounds.

On August 16, 2001, Exponent, Inc., presented the results of an in vitro bioaccessibility study of polychlorinated dioxins and furans in Midland soils. Exponent, Inc., conducted this study under contract for The Dow Chemical Company. The MDEQ has not received a written report detailing the study protocol or results. This in vitro study was conducted to determine the bioavailability of dioxins and furans in Midland soils. Data gathered from this study has been proposed for use in a site-specific risk assessment of the potential human health effects of exposure to these compounds in Midland. The TSG members have expressed concerns for the use of this type of in vitro protocol for hydrophobic organic compounds without validation in an appropriate animal model, such as swine, for risk assessment purposes. The TSG will review and comment on the final report once it is received.

Status of the TSG Recommendations from the Interim Report:

- The TSG recommended that efforts to increase MDEQ's interactions with other state agencies continue and that each of the subcommittees continue to pursue the work with which it is charged.

Status: The expanded TSG continues to meet on a regular basis. As discussed previously, work is ongoing in each subcommittee.

- B. *The Michigan Environmental Science Board Panel recommended that "MDEQ continue to incorporate the best available science in the development and review of its environmental standards," and identified specific areas in which to focus initial efforts.*
1. The Michigan Environmental Science Board Panel made two specific recommendations concerning the MDEQ criteria developed under the authority of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, that are protective of incidental ingestion of soil (soil direct contact criteria). First, the Michigan Environmental Science Board Panel recommended that occasional high intakes of soil, rather than average daily chronic intakes, may be more appropriate in the development of these criteria. Second, the Michigan Environmental Science Board Panel recommended that the MDEQ consider "exposure to the same substances

through other exposure routes, such as water and food" in the development of soil direct contact criteria.

The MDEQ is responsible for the development of Part 201 soil direct contact criteria. These criteria are used primarily by the Environmental Response Division, the Waste Management Division, and the Storage Tank Division in programs administered by those divisions. In the past, the MDEQ has developed a direct contact criteria protective of an occasional high intake of soil (sometimes referred to as "pica behavior") for only one compound; cyanide. Regarding the Michigan Environmental Science Board Panel's recommendation dealing with other routes of exposure for soil direct contact criteria, other routes of exposure such as food and water, are not typically accounted for unless sufficient data exists in the scientific literature to allow for development of a relative source contribution factor other than the default of 100 percent. For example, the soil direct contact criteria for lead considers exposure to lead via air, food, and drinking water. It should also be noted that the drinking water criteria used in the remediation of contaminated groundwater, utilizes a default value of 20 percent for the relative source contribution factor to account for potential exposure through other sources.

Status of the TSG Recommendations from the Interim Report:

- The TSG recommended that the MDEQ identify those compounds for which an occasional high intake of soil may pose an acute health risk and develop direct contact criteria protective of this exposure scenario.

Status: This was identified as a low priority recommendation. Although it has been discussed and a process drafted for identification of acutely toxic hazardous substances, no work has been completed to date.

- In addition, the TSG recommended that algorithms for the calculation of direct contact criteria be developed for a child-only receptor and that these algorithms be considered for use in developing criteria for land uses where children may be expected to be present (e.g., the residential scenario).

Status: Child-only direct contact criteria have been drafted by the Environmental Response Division; however, because it is a low priority recommendation, finalization of these criteria has not been pursued.

- The TSG recommended that a relative source contribution factor less than one (i.e., less than 100 percent) be used to develop soil direct contact criteria where chemical-specific information is available.

Status: This option is currently available under the existing rules; however, an update of the scientific literature has not been conducted to determine if more chemical-specific relative source contribution factors can be developed. It is currently identified as a low priority recommendation.

2. The Michigan Environmental Science Board Panel recommended that it be a high priority for the MDEQ to collect high quality hazardous air pollutant data and conduct a risk assessment. They also noted that, "The recommended risk assessment should be used to prioritize the hazardous air pollutants based on estimated relative risk and the contribution that air exposures make to overall risk from the hazardous air pollutants."

The Michigan Environmental Science Board Panel recommended a periodic update schedule for screening level reevaluation and that "total risk" be assessed.

The Air Quality Division is currently developing an Air Toxics Monitoring Strategy to address the need for high quality data on toxic air contaminants. The panel recommendation is consistent with this effort. As part of the development of the Air Toxics Monitoring Strategy, an analysis is currently being conducted of current monitoring data gaps. Numerous problems with existing data have been identified. As monitoring data is collected, it will be necessary to conduct an analysis of it. This Michigan specific data, combined with data compiled through various EPA efforts (e.g., National Air Toxic Assessment, Cumulative Exposure Projects) can be used as a portion of the rationale for prioritizing screening level updates. However, a comprehensive strategy is needed for a routine update of all screening levels, not just for those compounds for which monitoring data is available.

Status of the TSG Recommendations from the Interim Report:

- The TSG recommended that the Air Toxics Monitoring Strategy effort be continued.

Status: This was identified as a high priority recommendation. The Air Quality Division has continued work on the Air Toxics Monitoring Strategy. It is expected that a draft copy will be sent out for scientific peer review by September 30, 2001.

- The TSG recommended that a procedure be developed for a routine update of all screening levels that considers all relevant information.

Status: This was identified as a high priority recommendation. No activity has taken place on this recommendation due to other responsibilities and priorities of staff.

3. The Michigan Environmental Science Board Panel recommended that the MDEQ continue to monitor the EPA's efforts to assess drinking water and surface water standards for protection of children's health and "consider application of new EPA approaches to Michigan standards as they are validated."

Several MDEQ divisions routinely monitor federal and state drinking water and federal surface water standards and incorporate new or revised standards into Michigan programs as appropriate. Consistency across divisions and programs is a primary objective when incorporating new or revised standards so that all MDEQ programs that rely on a set of standards or criteria are using the same values.

Status of the TSG Recommendations from the Interim Report:

- The TSG recommended that the MDEQ continue to track new and revised federal drinking water and surface water standards and incorporate these as appropriate.

Status: This was identified as a high priority recommendation. Activities to implement include the following:

The Surface Water Quality Division currently tracks all changes in federal surface water quality standards, and incorporates these changes into rules when appropriate.

Section 20(a)(5) of Part 201 states that if a state drinking water standard exists for a hazardous substance, the drinking water criterion is the more restrictive of that state standard and the aesthetic criterion, if one is available. The Environmental Response Division currently monitors the promulgation of both federal and state drinking water standards. It generally takes a minimum of one year for a federal drinking water standard to be promulgated as a state standard. Since Part 201 specifically refers to state standards and it takes at least one year for a federal standard to be adopted as a state standard, the drinking water criteria may not be consistent with the federal safe drinking water act.

- The TSG recommended that the MDEQ monitor EPA's efforts to revise methods for calculations of drinking water and surface water standards for protection of children's health and incorporate these revised methods as appropriate.

Status: This was identified as a high priority recommendation. The Environmental Response Division and the Surface Water Quality Division routinely monitor information from the relevant EPA offices in the area of children's health issues and development of drinking water and surface water standards for the protection of children's health. Other sources that would provide information regarding children's health and risk assessment methods are also monitored on a routine basis. As of July 2001, no information regarding impending changes to standards or risk assessment methods was identified.

C. *The Michigan Environmental Science Board Panel recommended that the MDEQ "incorporate the concepts of mixtures and cumulative risk into its regulatory risk assessment process as the science matures."*

1. In response to this recommendation, the TSG has formed the Mixtures and Cumulative Risk Subcommittee discussed previously to evaluate the available approaches for performing toxicological risk assessment for exposures to mixtures of substances as well as cumulative exposure and risks.

Status of the TSG Recommendations from the Interim Report:

- The TSG recommended the efforts of the Mixtures and Cumulative Risk Subcommittee continue to address this issue.

Status: The status of efforts in this area is outlined in the previous section regarding the Mixtures and Cumulative Risk Subcommittee.

2. The Environmental Response Division has requested that the TSG review a proposal for development of Part 201 cleanup criteria for total petroleum hydrocarbons. The proposal includes an approach to address the noncarcinogenic risks associated with exposure to mixtures of petroleum hydrocarbons as well as an approach to address the carcinogenic risks associated with exposures to mixtures of polycyclic aromatic hydrocarbons. No action has taken place on this recommendation due to other priorities and responsibilities of staff.

Status of the TSG Recommendations from the Interim Report:

- The TSG recommended that the Environmental Response Division's proposal be reviewed for incorporation into the MDEQ programs, if appropriate, and that the TSG recommendation be forwarded to the Deputy Director.

Status: This issue is considered a low priority. Deputy Director Nash has requested that before any recommendations are made on this issue, a review of the scientific literature be conducted to identify the state of the art on this subject as well as how other states' cleanup programs are managing total petroleum hydrocarbons.

- D. *The Michigan Environmental Science Board Panel recommended that, "MDEQ continue to keep abreast of the new information emanating from the federal government, academia and scientific literature" regarding the impact of environmental contaminants on children's health.*

In response to this recommendation, the TSG has formed the Children's Environmental Health Subcommittee discussed previously. This subcommittee has been tracking developments in a variety of federal and state agencies as well as research published in the scientific literature.

Status of the TSG Recommendations from the Interim Report:

- Children's Environmental Health Subcommittee members should continue to be assigned to track each of the topics and report back to the TSG periodically.

Status: Work has been ongoing in this area as outlined previously in the section regarding the Children's Environmental Health Subcommittee. The subcommittee chairperson regularly updates the full TSG on subcommittee activities.

III. SUMMARY OF TSG ACTIONS IN RESPONSE TO THE DIRECTIVES CONTAINED IN THE MARCH 17, 2000 MEMO FROM DIRECTOR HARDING TO DEPUTY DIRECTOR NASH

Director Harding indicated that the TSG should "seek outside expertise from both industry and environmental health organizations as needed for specific issues." As an initial step to comply with this directive, a memo under Deputy Director Nash's signature was mailed to a list of industrial associations, academic institutions, and environmental organizations. The memo requested assistance in identifying a pool of scientific experts in the areas of children's health, risk assessment, and toxicology from which the TSG could request outside expert advice. The response to this request has been minimal. One response was received from a university identifying one individual. Another response was received from a company that identified an individual to serve as a liaison between this company and the TSG. No other responses have been received to date.

Status of the TSG Recommendations from the Interim Report:

- Since the initial effort to identify a pool of outside experts did not produce a significant response, the TSG recommended that efforts be made to identify qualified outside experts as specific issues arise.

Status: Currently, no outside experts have been sought for any specific issues.

IV. GENERAL RECOMMENDATIONS FOR FUTURE MDEQ ACTIONS FROM THE INTERIM REPORT

In addition to the recommendations described previously, the Michigan Environmental Science Board Panel indicated that the MDEQ "risk assessors maintain their scientific strengths by taking

advantage of education opportunities offered through various scientific societies, symposia, and the federal government. Such efforts would allow the scientific staff at the MDEQ to continue to appropriately use the most current risk assessment techniques." The TSG supported this recommendation in the Interim Report.

Status of the TSG Recommendations from the Interim Report:

- The TSG recommended that outside speakers from academia/industry/federal government could be invited to conduct in-service training sessions for TSG members. This would provide a more cost-effective method of training than sending a number of staff to out-of-state training. Examples of these in-service training sessions could be a session on implementation of the EPA Cancer Risk Assessment Guidelines or application of the EPA Inhalation Reference Concentration Methodology.

Status: In January 2001, a training workshop for conducting multipathway risk assessments using state-of-the-art software was held. The software implements the latest EPA guidance for evaluating risk from emission sources, "Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities." This training opportunity was made available to all members of the TSG and to permit engineers and modeling and meteorology professionals within appropriate MDEQ divisions. Appropriate staff from Michigan Department of Agriculture and the Michigan Department of Community Health were also invited to participate in this training.

Future plans for training are being made by the Children's Environmental Health Subcommittee. This group is planning to bring in members from Community Action Against Asthma to provide a seminar on their project. A seminar on this multi-disciplinary project will provide members with a firsthand view of a federally grant-funded, children's environmental health research now underway in Southeast Michigan.

V. NEW RECOMMENDATIONS FOR THE FIRST ANNUAL REPORT

A review of the TSG recommendations from the Interim Report indicates all are still applicable. Efforts should continue to implement these recommendations.